DOCUMENT RESUME

ED 320 445 FL 018 656

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TITLE Stress-Timing, Spanish Rhythm, and Particle Phonology.
SPONS AGENCY Rutgers, The State Univ., New Brunswick, N.J. Research Council.
PUB DATE Dec 89
NOTE 11p.; Paper presented at the Annual Meeting of the Linguistic Society of America (Washington, DC, December 27-30, 1989).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150) -- Information Analyses (070)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Cubans; Interviews; Intonation; Language Research; *Phonology; *Pronunciation; *Spanish; *Stress (Phonology); Vowels
IDENTIFIERS *Particles (Grammar)

ABSTRACT

Data was collected from 45-minute conversational interviews of 20 Cubans, who arrived in the United States in 1980, to analyze vocalic processes in Cuban Spanish. Four vocalic processes found in Cuban Spanish (raising and devoicing of unstressed vowels, lengthening of stressed vowels, and diphthongization of stressed mid vowels) were examined. Vowels are considered to be composed of three elementary particles: "a" (aperture), "i" (palatality), and "u" (labiality). Raising is characterized as an instance of decay, in which an aperture particle is lost. Devoicing is described as the addition of the "devoicing" punctuator "o" beneath particles. Lengthening is characterized by the repetition of a particle following the "space" punctuator. Finally, diphthongization, an instance of fission, is represented by the addition of a tonality particle, with the "half-moon" punctuator to indicate non-syllabicity, after the "space" punctuator. In addition, these vocalic processes are related to recent studies in experimental phonetics, which suggest that a length difference is emerging between stressed and unstressed syllables, thus calling into question the traditional classification of Spanish as a syllable-timed language. Contains 29 references. (GLR)

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STRESS-TIMING, SPANISH RHYTHM, AND PARTICLE PHONOLOGY*

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Linguistic Society of America
Annual Meeting
Washington, DC
December 27-30, 1989

Introduction

Latin American lowlands Spanish, and Caribbean Spanish in particular, is often described in the literature as having a very stable 5-vowel system, in comparison to its weak consonantal system. (See Canfield 1981 for Latin American Spanish dialectology and Haden and Matluck 1977:15 for Cuban Spanish.) Indeed, very little research has been carried out on vocalic phenomena in Caribbean Spanish, especially when compared to the numerous studies of consonantal phenomena which occur in syllable rhymes, including aspiration and deletion of /s/, velarization and deletion of /n/, and neutralization of /l/ and /r/.[1] However, one Caribbean variety, Cuban Spanish, has attracted a modest amount of attention with regard to some vocalic phenomena.

In general, studies of vowels in Latin American Spanish have been limited to highlands Spanish: vowel reduction and/or devoicing in central Mexico (Canellada and Zamora 1960) and the Andean region (Flórez 1951:76-77). Vowel devoicing in Bogotá, Colombia is found to occur most often in unstressed vowels preceded by a voiceless consonant and followed by a voiceless consonant or a pause (Uber 1979). Mid-vowel raising is discussed for several Spanish dialects in Amastae 1982:180-184. He finds that unstressed /e/ and /o/ are raised most frequently when followed by another vowel, especially if that following vowel is high.

One of the first studies to mention vocalic phenomena in Cuban Spanish is that of Olmsted 1954. In Regla, a suburb of Havana, he finds lengthening of stressed vowels, and raising of unstressed vowels, particularly in post-tonic position: [kǻ·rU] or [kǻ·ru] for caro 'expensive'; [el kǒ·mI] or [el kǒ·mi] for él come 'he eats'; and [kǻ·ra^] or [kǻ·rə] for cara 'face' (293).[2] Almendros 1958:143-145 finds that vowels in Cuban Spanish are more open than those of Castilian. He notes a raising of unstressed /e/ to [i] when followed by a stressed vowel (pasiar for pasear 'to stroll') and apocope of final unstressed vowels (much^{o} 'a lot', lluev^{e} 'it's raining', poc^{o} 'a little'). Bartoš 1965:147, discussing the rapidity of Cuban speech, mentions relaxation of vowels. Alzola 1965:362 notes raising of unstressed /e/ to [i] (siñó for señor 'Mr.') and /o/ to [u] (cuntenta for contenta 'happy'). Isbăşescu 1968 finds a strong tendency toward closing of /e/ and /o/ in unstressed position in the last syllable of a word: [marẹ] mares 'seas' (25) and [peasu^{s}] pedazos 'pieces' (27). In their study of Havana Spanish, Haden and Matluck 1977:15-16 discuss weakening of vowels in absolute-final position, characterized by devoicing of /e/ and /o/: campesin[o] 'peasant'.

The Data

This paper will present an analysis and discussion of such

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vocalic processes in Cuban Spanish. Data for this study are taken from 45-minute conversational interviews conducted by the present writer with each of 20 Cubans who arrived in the United States in 1980. Most previous studies of Cuban-American Spanish have focused on immigrants of the 1960's and 1970's. It is hoped that the current investigation will provide a notion of the linguistic situation in Cuba closer to the present day. The informants represent various occupations, ages, educational levels, races, and geographic areas of the island, as well as both sexes.

Raising of unstressed vowels and lengthening of stressed vowels have been encountered in the data for the present study, in addition to devoicing of unstressed vowels and diphthongization of stressed mid vowels. Some examples follow:

1. RAISING OF UNSTRESSED VOWELS.

banc[u] for banco 'bank'
entenderl[u] for entenderlo 'to understand it'
propi[ə] for propia 'own'
tien[i] for tiene 'he has'
abuel[u] for abuelo 'grandfather'
minut[u]s for minutos 'minutes'
nadi[i] for nadie 'nobody'
escrib[u] for escribo 'I write'
abuel[ə] for abuela 'grandmother'

This process occurs most frequestly with /e/, raising it to [i], although /o/ and /a/ may be raised to [u] and [ə], respectively. The raising of /a/ is an interesting case, because it is often stated that the vowel [ə] does not occur in Spanish. The process of raising occurs most frequently in a prepausal syllable, but it is not constrained by the presence or lack of voicing on a preceding consonant.

2. DEVOICING OF UNSTRESSED VOWELS.

cinc[o̥] 'five'	literatur[ə̥] 'literature'
entrar[o̥]n 'they entered'	och[o̥] 'eight'
cárc[ɛ̥]l 'jail'	pres[o̥]s 'prisoners'
siempr[ɛ̥] 'always'	humillart[ɛ̥] 'to humble yourself'
zapat[o̥]s 'shoes'	suert[ɛ̥] 'luck'
mir[ə̥] 'look'	gust[ə̥]n 'they are pleasing'
banc[o̥] 'bank'	much[o̥] 'a lot'
noch[ɛ̥] 'night'	

Most instances of devoicing occur in prepausal syllables, especially if the contiguous consonant(s) is (are) voiceless. However, this process is not limited to a voiceless consonantal environment, as evidenced by the above examples. No examples of

devoicing of /i/ or /u/ are found, because it is very rare to find unstressed high vowels in final syllables in Spanish.

3. LENGTHENING OF STRESSED VOWELS.

enferm[e:]ra 'nurse'	esqu[i:]na 'corner'
autom[ó:]vil 'automobile'	h[ú:]meda 'humid'
Hab[a:]na 'Havana'	est[u:]dio 'study'
pr[e:]sos 'prisoners'	llev[a:]ron 'they carried'
b[a:]nco 'bank'	cat[ó:]lica 'Catholic'
am[i:]gos 'friends'	trab[a:]jo 'work'
trabajad[o:]ra 'hard-working'	[ó:]mnibus 'bus'
mom[e:]nto 'moment'	C[a:]stro 'Castro'
m[ú:]sica 'music'	calur[o:]sa 'warm'
ten[e:]r 'to have'	

Vowel lengthening is rare in word-final syllables. Otherwise, it appears to occur with all five vowels and regardless of which syllable carries the stress.

4. DIPHTHONGIZATION OF STRESSED MID VOWELS.

prácticam[ei̯]nte for prácticamente 'practically'
experi[ei̯]ncia for experiencia 'experience'
af[ei̯]cta for afecta 'it affects'
ust[ei̯]d for usted 'you'
m[éi̯]dico for médico 'doctor'
resp[ei̯]to for respeto 'respect'
exclusivam[ei̯]nte for exclusivamente 'exclusively'
c[oy̯]mo for como 'I eat'
cerv[ei̯]za for cerveza 'beer'
cr[ei̯]o for creo 'I believe'
esp[oy̯]sa for esposa 'wife'
ad[ei̯]ntro for adentro 'inside'
set[ei̯]nta for setenta 'seventy'
respu[ei̯]sta for respuesta 'answer'
francam[ei̯]nte for francamente 'frankly'

It will be noted that diphthongization occurs quite frequently before a tautosyllabic /n/, especially in -mente adverbs. It is much less common than vowel lengthening, apparently because it applies in a more restricted environment. It is interesting to note that there are cases where diphthongization produces a triphthong if the original vowel was part of a diphthong: exper[iei̯]ncia, resp[uei̯]sta.

The Analysis

The vocalic processes described above will be analyzed within the framework of particle phonology, as outlined in Schane 1984, in which vowels are considered to be composed of three elementary particles: a, i, and u, showing the characteristics represented in Figure 1.

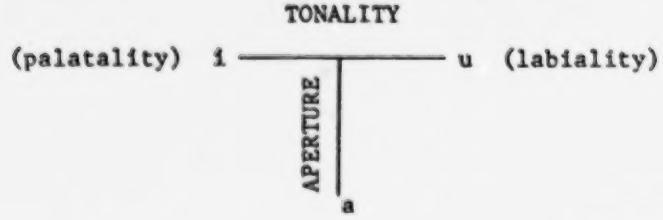


Figure 1.

Schane's is not the first treatment to propose that vowels are composed of elements or unary features. Other models incorporating the view that [a], [i], and [u] are the fundamental components of vowels include: (1) various papers by Donegan and Stampe within the framework of natural phonology; (2) Anderson, Ewen and Staun 1985, within the framework of dependency phonology; (3) Goldsmith 1985 and van der Hulst and Smith 1985, within the framework of autosegmental phonology; and (4) Kaye, Lowenstamm and Vergnaud 1985, within the theory of charm and government. The models used by these different researchers are in no way to be taken as notational variants of one another. Rather, the point is that work within various different phonological frameworks has concluded that [a], [i], and [u] are the three basic components of which vowels are formed.

As outlined in Schane 1984, the primitive phonological elements of particle phonology are elementary particles and punctuators. As stated above, the three elementary particles are a, i, and u. Vowels other than [a], [i], and [u], as well as all diphthongs, are composed of combinations of particles. As shown in Figure 1, the particles i and u, which represent different manifestations of tonality (palatality for i, and labiality for u), are opposed to the aperture particle a.

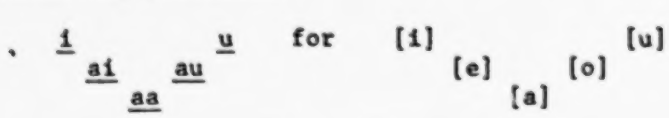
In Spanish, the mid vowels [e] and [o] would have the particle structures ai and au, respectively. For languages with two nonhigh central vowels, such as [ə] and [a], the former is represented by one occurrence of the aperture particle (a), whereas the latter would have two (aa).

Long vowels contain extra particles after the 'space' punctuator (Schane 1984:132). For vowels with tonality, it is the tonality particle which is repeated (au u for [o:]). For nonhigh central vowels (i.e., vowels without tonality), it is the aperture particle which is repeated (aa a for [a:]).

Diphthongs also contain extra particles after the 'space' punctuator, with the 'half-moon' punctuator under the extra tonality particle to specify the nonsyllabic component: ai i̯ for [ei̯] (Schane 1984:132).

Devoiced vowels can be characterized as containing the 'devoicing' punctuator '̥' beneath particles (a i̥ for [e̥]). This punctuator is not proposed by Schane 1984, but is introduced here.

We can thus represent the vowel system of Spanish with the following particles:



We use two occurrences of the aperture particle for [a] in order to describe its raising in unstressed position to [ə], which will be represented as a. Let us now examine the vocalic processes found in Cuban Spanish in more detail in terms of particle phonology.

1. RAISING OF UNSTRESSED VOWELS. Raising can be characterized as an instance of decay, which is one of the basic operations of particle phonology. Decay is simplification of a complex particle configuration: one or more of the component particles are lost (Schane 1984:137). Raising of [e] to [i] can be represented as ai ⟶ i, raising of [o] to [u] as au ⟶ u, and raising of [a] to [ə] as aa ⟶ a. In all cases, we have simplification of a complex particle configuration by loss of an aperture particle (a).

2. DEVOICING OF UNSTRESSED VOWELS. Devoicing can be characterized as the addition of a 'devoicing' punctuator '̥' beneath particles: ḁi for [e̥], ḁu for [o̥], and ḁa for [ḁ].

3. LENGTHENING OF STRESSED VOWELS. Lengthening can be described as repetition of a particle following the 'space' punctuator: i ⟶ i i for [i:], ai ⟶ ai i for [e:], aa ⟶ aa a for [a:], au ⟶ au u for [o:], and u ⟶ u u for [u:]. Recall that the repeated particle is the tonality particle for those vowels with tonality, and the aperture particle for nonhigh central vowels.

4. DIPHTHONGIZATION OF STRESSED MID VOWELS. Diphthongization is represented by the addition of a tonality particle, with the 'half-moon' punctuator to indicate non-syllabicity, after the 'space' punctuator: ai ⟶ ai i̯ for [e] ⟶ [ei̯] and au ⟶ au u̯ for for [o] ⟶ [ou̯]. This process can be characterized as an instance of fission, which is another of the basic operations of particle phonology. Fission accommodates those processes where monophthongs become diphthongs. The complex particle configuration of a monophthong is split up to become a sequence of particles for the diphthong (Schane 1984:135). An interesting consequence of this particle analysis is the nice way of characterizing both processes which apply to stressed vowels in Cuban Spanish. It is possible to view diphthongization as 'lengthening gone wild'. Schane 1984:138 states that in languages with both long and short vowels, dighphongs generally behave like long vowels. Thus, the law of mora conservation requires that mora count be preserved during fission. So if the [e] of médico 'doctor' has been lengthened (ai ⟶ ai i), it may then be diphthongized (ai i ⟶ ai i̯) by fission. In this example of fission, we can see that a long vowel splits up into that vowel and a glide. The tonality

particle (i) that originally was part of the length representation of the long vowel becomes the source of the homorganic glide of the diphthong, as discussed by Schane (1984:135) for Old French, Icelandic, and Germanic. A similar parallel can be drawn for the [o] of esposa 'wife', which may first be lengthened (au → au u), and then diphthongized by fission (au u → au u̯). Indeed, it has been pointed out that lengthening occurs much more frequently, and in more different phonetic environments, than diphthongization. Thus, it is possible that diphthongization, or fission, is an incipient process which represents a second stage in the process of lengthening.

Consequences for Syllable Length

What are the consequences of the vocalic processes in Cuban Spanish which have been analyzed here, other than the fact that most previous research on this variety of Spanish has focused on consonantal phenomena? One consequence is that there appears to be emerging a length difference between stressed and unstressed syllables. Traditional descriptions of Spanish rhythm have stated that Spanish is a syllable-timed language; that is that all syllables, whether stressed or unstressed, are of more or less equivalent duration (Barrutia and Terrell 1982:19-22). To be sure, Spanish is closer to being syllable-timed than is English, which is a stress-timed language. However, recent studies in experimental phonetics have found that Spanish deviates from the traditional category of 'syllable-timed language'. Pointon 1980 concludes, after a re-examination of others' data, that Spanish is neither stress-timed nor syllable-timed, but that each segment has a 'standard duration', dependent on its phonetic context. Hoequist 1983a,b,c, in an experiment dealing with Japanese and Spanish, and compared with data on English, finds that Spanish syllables show comparatively little lengthening under stress, in comparison to English (1983a). However, he states that Spanish has final lengthening and lengthening under accent, but lacks the temporal compensation effects found in English. He concludes that Spanish deviates greatly from the category of syllable-timed languages, being neither duration-controlling, as is Japanese, nor duration-compensating, as is English (1983b). Miller 1984 conducted a seven-language perceptual experiment in which the subjects included phoneticians and nonphoneticians. English and French phoneticians classified Argentine Spanish as clearly stress-timed for reading style, but somewhat less so for conversational style. Clegg and Fails 1985 and 1987 find that stressed and open syllables are up to 35% longer than unstressed and closed ones, in their spectrographic analysis of 6 informants from different areas of Latin America.

Toledo 1985 and 1987 compared the rhythmic patterns of several styles of reading and spontaneous speech, and concluded that Spanish is a free rhythmical language, rather than a syllable- or a stress-timed language. Toledo 1989, examining a

recorded corpus of pairs and triads of words of varying lengths within the sentence 'Digo . . . otra vez' ('I say . . . again'), finds duration patterns among speakers of Buenos Aires Spanish to be similar to those of stress-timed languages like English, Swedish and Dutch.

These experimental studies have shown that, in many varieties of Spanish, it is far from clear that Spanish is a syllable-timed language. The data for the present investigation add fuel to the fire. Lengthening and diphthongization of vowels under stress, and raising and devoicing of vowels in unstressed position, are vocalic processes which contribute to a greater differentiation in length between stressed and unstressed syllables. This difference is especially notable in some examples in which a lengthening process and a reduction process have applied to different syllables within a word:

est[u:]di[u] for estudio 'study'

incl[u:]s[o̥] for incluso 'including'

cerr[a:]d[ḁ]s for cerradas 'closed'

g[u:]st[ḁ] for gusta 'it is pleasing'

m[i:]sm[o̥] for mismo 'same'

p[e:]s[o̥]s for pesos 'unit of currency'

razon[a:]bl[i] for razonable 'reasonable'

resp[e͡i] t[u] for respeto 'respect'

Utterances produced in this manner are certainly not syllable-timed. Experimental research on Cuban Spanish is called for, in order to determine the type of timing which is used in that variety, in comparison to the other varieties of Spanish which have been investigated experimentally.

Conclusion

This paper has examined four vocalic processes found in Cuban Spanish (raising and devoicing of unstressed vowels, and lengthening and diphthongization of stressed vowels) within the framework of particle phonology as outlined in Schane 1984. Vowels are considered to be composed of three elementary particles: a (aperture), i (palatality), and u (labiality). Raising is characterized as an instance of decay, in which an aperture particle is lost. Devoicing is described as the addition of the 'devoicing' punctuator '̥' beneath particles. Lengthening is characterized by the repetition of a particle following the

'space' punctuator. Finally, diphthongization, an instance of fission, is represented by the addition of a tonality particle, with the 'half-moon' punctuator to indicate non-syllabicity, after the 'space' punctuator.

In addition, these vocalic processes are related to recent studies in experimental phonetics which suggest that a length difference is emerging between stressed and unstressed syllables, thus calling into question the traditional classification of Spanish as a syllable-timed language.

FOOTNOTES

* This research was made possible in part by a one-semester leave under the Faculty Academic Study Program of Rutgers University in the Spring of 1985, and by a University Grant from the FASP fund and the Research Council of Rutgers University. I would like to express my gratitude to Marta San Martín and her entire staff at the Lutheran-Catholic Resource Center in Union City, NJ for their wonderful help in contacting informants. Special thanks also to María Arcos, Keith Mason, Dayci Chivukula, and Sally Jo Weber. Finally, my deepest thanks to my informants, who remain anonymous, for allowing me to interview them and for sharing their fascinating experiences with me.

1. For Cuban Spanish, see the studies of Uber 1988 and Uber 1989, in addition to references cited therein.
2. In discussing the work of other researchers, I have used the transcriptions they have given, so as to not misrepresent their claims.

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